

LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended): An image forming apparatus, comprising:

~~one or more~~ a plurality of processing units wherein each processing unit processes data for forming an image;

a control unit that communicates with each of said plurality of processing units directly, or indirectly through another one or more of said processing units;

an update program acquiring unit that acquires ~~an update program for updating~~ programs configured to update corresponding programs of said processing units ~~and a program of said control unit~~; and

a program updating unit that updates the corresponding programs of said processing units in the a prioritized update order ~~of the number of said other one or more~~ in which the processing unit or processing units through which are indirectly communicated with by said control unit communicates with each of are assigned a highest priority so as to be updated before any of said processing units directly communicated with by said control unit.

2. (Currently Amended): The image forming apparatus as claimed in claim 1, wherein said program updating unit also determines ~~the~~ a priority order in which the programs of said processing units which are directly communicated with by said control unit and said control unit itself are updated as part of said prioritized update order thereby to create prioritized update order information ~~based on the update program acquired by said upgrade program acquiring unit~~.

3. (Currently Amended): The image forming apparatus as claimed in claim 2, wherein said program updating unit correlates the prioritized update order in which the programs of said processing units and of said control unit itself are updated with names of the programs.

4. (Currently Amended): The image forming apparatus as claimed in claim 2, wherein the prioritized update order information includes information indicating update status.

5. (Original): The image forming apparatus as claimed in claim 1, wherein said control unit has one or more application programs related to image forming processing; and
said program updating unit can update the application programs individually.

6. (Original): The image forming apparatus as claimed in claim 1, wherein one of said processing units is a display unit that displays information of the image forming apparatus; and
said program updating unit updates the program of the display unit after the programs of other processing units and the program of said control unit are updated.

7. (Currently Amended): The image forming apparatus as claimed in claim 1, further comprising a communication unit ~~for connecting~~ configured to connect the image forming apparatus to a network; wherein

said update program acquiring unit acquires the update ~~program~~ programs using said communication unit.

8. (Currently Amended): The image forming apparatus as claimed in claim 7, wherein said control unit reboots updated ones of said processing units in a same order as the prioritized update order in which said processing units are updated.

9. (Original): The image forming apparatus as claimed in claim 7, wherein said control unit reboots updated ones of said processing units after all to-be-updated programs have been updated.

10. (Currently Amended): The image forming apparatus as claimed in claim 7, wherein said control unit includes a primary program stored in a first memory region and a secondary program duplicating at least some of the primary program ~~when a primary program thereof is to be updated, executes a secondary program~~ stored in a second memory region other than a first memory region in which the primary program is stored, the control unit being configured to execute the secondary program while the primary program is being updated.

11. (Currently Amended): The image forming apparatus as claimed in claim 10, wherein said control unit, ~~when the primary program thereof is being updated, executes the secondary program stored in the second memory region~~ is part of a volatile memory.

12. (Currently Amended): The image forming apparatus as claimed in claim 11, wherein the secondary program is smaller in size than the primary program.

13. (Currently Amended): The image forming apparatus as claimed in claim 7, wherein said control unit, when updating the program of one of said processing units, causes the one of said processing units being updated to operate in a restricted mode.

14. (Currently Amended): The image forming apparatus as claimed in claim 7, wherein ~~said control unit, when communication with said processing unit~~ after said update programs are all acquired using said communication unit and the connection between the image forming apparatus and the network is disconnected, the control unit reboots itself.

15. (Original): The image forming apparatus as claimed in claim 7, wherein said control unit reboots itself in a predetermined time after the last one of updated processing units is rebooted.

16. (Original): The image forming apparatus as claimed in claim 7, wherein said control unit stores information indicating a state of the image forming apparatus in a non-volatile storage unit before rebooting itself, and restores the image forming apparatus to the stored state after rebooting itself.

17. (Original): The image forming apparatus as claimed in claim 16, wherein the state of the image forming apparatus is a state in which the power consumption of the image forming apparatus is reduced.

18. (Original): The image forming apparatus as claimed in claim 17, further comprising a display unit that displays information related to the image forming apparatus;

wherein the state of the image forming apparatus is information displayed on the display unit.

19. (Original): The image forming apparatus as claimed in claim 18, wherein said display unit displays the progress of the update of the programs.

20. (Original): The image forming apparatus as claimed in claim 19, wherein said display unit, if the image forming apparatus is set at the state in which the power consumption thereof is reduced, does not display the progress of the update of the programs.

21. (Currently Amended): The image forming apparatus as claimed in claim 7, wherein said program updating unit creates an update management table including information related to ~~the~~ each acquired update program.

22. (Currently Amended): The image forming apparatus as claimed in claim 21, wherein the update management table includes module IDs that specify ~~the~~ each acquired update program.

23. (Original): The image forming apparatus as claimed in claim 7, wherein said processing units include processing units that said control unit can directly reboot and processing units that automatically reboot themselves in response to a request from said control unit.

24. (Original): The image forming apparatus as claimed in claim 7, further comprising:

an update result information creating unit that creates update result information indicating results of the update of the programs; and

an update result outputting unit that outputs the update results based on the update result information.

25. (Original): The image forming apparatus as claimed in claim 24, wherein said update result outputting unit either prints the update results, transmits an e-mail message indicating the update results, or displays a screen indicating the update results.

26. (Original): The image forming apparatus as claimed in claim 24, wherein the update result information includes at least one of the version of a program before update, the version of the program after update, the date and time the program is updated, and whether the program is updated successfully.

27. (Original): The image forming apparatus as claimed in claim 24, wherein said update result information creating unit stores the update result information in a non-volatile storage unit.

28. (Original): The image forming apparatus as claimed in claim 27, wherein said update result information creating unit accumulates the update result information.

29. (Original): The image forming apparatus as claimed in claim 27, wherein said control unit restarts the image forming apparatus after said update result information creating unit stores the update result information in the non-volatile storage unit; and

said update result outputting unit outputs the update results after the image forming apparatus is restarted.

30. (Currently Amended): A method of updating a plurality of programs ~~for an image forming apparatus~~ corresponding to a plurality of processing units associated with an image forming apparatus that processes data for forming an image, the image forming apparatus including a control unit that communicates with each of said plurality of processing units directly, or indirectly through another one or more of said processing units, the method comprising ~~the steps of:~~

acquiring ~~an update program~~ programs for updating configured to update at least the programs corresponding to a plurality of processing units; and

updating each of the programs corresponding to at least the plurality of processing units in the a prioritized update order of the number of in which the processing unit or processing units ~~through which~~ are indirectly communicated with by [[a]] said control unit ~~and are assigned a highest priority so as to be updated before any of the processing units unit~~ in which each program is installed communicates with each other directly communicated with by said control unit.

31. (Currently Amended): The method as claimed in claim 30, further comprising ~~the~~ step of:

rebooting ~~the~~ each processing unit in which one of the ~~program~~ programs is updated.

32. (Currently Amended): The method as claimed in claim 31, wherein the processing ~~unit~~ units in which the ~~program is~~ programs are updated is are rebooted in the ~~a same~~ same order in which the programs are updated.

33. (Currently Amended): The method as claimed in claim 30, further comprising ~~the~~
~~step of~~:

creating update result information indicating update results of the programs; and
outputting the update results of the programs based on the update result information.

34. (Original): The method as claimed in claim 33, wherein, in the step of outputting
the update results, the update results are either printed, transmitted as an e-mail message, or
displayed on a display unit.

35. (Original): The method as claimed in claim 33, wherein the update result
information includes at least one of the version before the update, the version after the
update, the date and time of the update, and whether the program has been updated
successfully.

36. (Currently Amended): The method as claimed in claim 35, wherein, in the step of
creating the update result information, the update result information is added to ~~the~~ past
update result information ~~of the past~~.

37. (Currently Amended): The method as claimed in claim 33, further comprising ~~the~~
~~step of~~ restarting the image forming apparatus after the step of creating the update result
information.

38. (Original): The method as claimed in claim 37, wherein, in the step of creating the update result information, the update result information is stored in a non-volatile storage unit before the image forming apparatus is restarted.

39. (New): The image forming apparatus as claimed in claim 1, wherein a processing unit or processing units which indirectly communicate with said control unit through two others of said processing units are assigned a higher priority than a processing unit or processing units which indirectly communicate with said control unit through only one other of said processing units so as to be updated before the processing unit or processing units which indirectly communicate with said control unit through only one other of said processing units.

40. (New): The image forming apparatus as claimed in claim 1, wherein the prioritized update order for the highest priority processing unit or processing units that are indirectly communicated with by said control unit includes further prioritized ordering based on a number of processing units forming each indirect connection so that the processing unit or processing units with the largest number of processing units forming the indirect connection are updated first.

41. (New): The method as claimed in claim 30, wherein, in the step of updating each of the programs corresponding to at least the plurality of processing units in a prioritized update order, a processing unit or processing units which indirectly communicate with said control unit through two others of said processing units are assigned a higher priority than a processing unit or processing units which indirectly communicate with said control unit through only one other of said processing units so as to be updated before the processing unit

or processing units which indirectly communicate with said control unit through only one other of said processing units.

42. (New): The method as claimed in claim 30, wherein, in the step of updating each of the programs corresponding to at least the plurality of processing units in a prioritized update order, the processing unit or processing units which indirectly communicate with said control unit through a greatest number of others of said processing units are updated first.